

PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing **See form PCT/ISA/210**
(day/month/year)

Applicant's or agent's file reference

BB04ZPK VAR

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/FR2005/000068

International filing date (day/month/year)

12.01.2005

Priority date (day/month/year)

12.01.2004

International Patent Classification (IPC) or both national classification and IPC

F28D9/00, F28F3/14, F28F13/08

Applicant

ZIEPACK

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/FR2005/000068

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language
_____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/FR2005/000068

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-16	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-16	NO
Industrial applicability (IA)	Claims	1-16	YES
	Claims		NO

2. Citations and explanations:

see supplemental sheet

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/FR2005/000068

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see supplemental sheet

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Boxes V and VII

- 1) The present notification mentions the following documents cited in the search report. The numbers assigned to them below will be used throughout the rest of the procedure:

D1: US-B1-6 470 878

D2: JP 57 192798 A

- 2) **PCT Article 6**

The application fails to comply with the requirements of PCT Article 6 since claims 1 and 11 are inconcise and claim 11 is unclear.

- 2.1) **Claim 1** includes all of the technical features of **claim 11**, without being dependent on the latter.

- 2.2) The passage "the global variation in the cross-section of one of the passages is in the same direction as a variation in the gas flow" in **claim 7** serves more to explain how to use the device than to clearly define the device in terms of its technical features. The limitations that are intended to be defined by these features are not clear from this claim.

- 2.3) Contrary to the requirements of Rule 6.4(a), the multiple dependent claims **3-9 and 13-15** serve as a basis for other multiple dependent claims.

Supplemental Box

3) **PCT Article 33(3)**

Furthermore, despite the lack of clarity mentioned above, the subject matter of claims 1-16 does not involve an inventive step within the meaning of PCT Article 33(3); consequently, the requirements of PCT Article 33(1) have not been met.

3.1) **Claims 1 and 11**

Document D1 describes (figures 1-3; the references in parentheses apply to this document);

A heat exchanger wherein

- modules (11) defining a first passage for a first fluid each comprise two metal sheets (column 9, lines 9 and 10), which form between them a network of channels (19, 21) that are parallel to one another in terms of fluid logics, each channel interposed between two neighbouring network channels being, along its entire developed length, adjacent to these two neighbouring channels, and
- a second passage for a second fluid is defined between these modules,
- the flow cross-section varies globally along at least one of the passages, with continuity in the channel profiles.

Consequently, this known heat exchanger differs from the subject matter of claim 1 in that the various channels are not separated by two respective weld lines that join the two metal sheets. However, the joining of two sheets by means of weld lines running along the separate

Supplemental Box

parallel channels amounts to a normal technical approach for a person skilled in the art, without involving an inventive step.

It follows that the subject matter of claim 1, and hence claim 11 (see point 2.1) of the present notification), is not considered to be inventive.

3.2) Dependent claims 2-10 and 12-16

Dependent claims 2-10 and 12-16 do not contain any feature that defines a subject matter that would satisfy the requirements of the PCT with regard to inventive step, for the following reasons:

- The additional features of claims 2-5, 8, and 12-15 are already disclosed in document D1.
- The additional features of claims 9, 10 and 16, moreover, have already been used for the same purpose in a comparable heat exchanger; see document D2, abstract. It is obvious to a person skilled in the art to apply these features, with a corresponding effect, to an exchanger according to document D1 and thereby obtain a heat exchanger according to claims 9, 10 and 16.

4) PCT Article 33(4)

The subject matter of claims 1-16 is considered to be industrially applicable within the meaning of PCT Article 33(4).

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

TRANSLATION
PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference BB04ZPK VAR		Date of mailing (day/month/year) See form PCT/ISA/210
International application No. PCT/FR2005/000068		FOR FURTHER ACTION See paragraph 2 below
International filing date (day/month/year) 12.01.2005	Priority date (day/month/year) 12.01.2004	
International Patent Classification (IPC) or both national classification and IPC F28D9/00, F28F3/14, F28F13/08		
Applicant ZIEPACK		

1. This opinion contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the opinion
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input checked="" type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP	Authorized officer
Facsimile No.	Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/FR2005/000068

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/FR2005/000068

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	1-16	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-16	NO
Industrial applicability (IA)	Claims	1-16	YES
	Claims		NO
2. Citations and explanations: see supplemental sheet			

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/FR2005/000068

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see supplemental sheet

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Boxes V and VII

- 1) The present notification mentions the following documents cited in the search report. The numbers assigned to them below will be used throughout the rest of the procedure:

D1: US-B1-6 470 878

D2: JP 57 192798 A

- 2) **PCT Article 6**

The application fails to comply with the requirements of PCT Article 6 since claims 1 and 11 are inconcise and claim 11 is unclear.

- 2.1) **Claim 1** includes all of the technical features of **claim 11**, without being dependent on the latter.

- 2.2) The passage "the global variation in the cross-section of one of the passages is in the same direction as a variation in the gas flow" in **claim 7** serves more to explain how to use the device than to clearly define the device in terms of its technical features. The limitations that are intended to be defined by these features are not clear from this claim.

- 2.3) Contrary to the requirements of Rule 6.4(a), the multiple dependent claims **3-9 and 13-15** serve as a basis for other multiple dependent claims.

Supplemental Box

3) **PCT Article 33(3)**

Furthermore, despite the lack of clarity mentioned above, the subject matter of claims 1-16 does not involve an inventive step within the meaning of PCT Article 33(3); consequently, the requirements of PCT Article 33(1) have not been met.

3.1) **Claims 1 and 11**

Document D1 describes (figures 1-3; the references in parentheses apply to this document);

A heat exchanger wherein

- modules (11) defining a first passage for a first fluid each comprise two metal sheets (column 9, lines 9 and 10), which form between them a network of channels (19, 21) that are parallel to one another in terms of fluid logics, each channel interposed between two neighbouring network channels being, along its entire developed length, adjacent to these two neighbouring channels, and
- a second passage for a second fluid is defined between these modules,
- the flow cross-section varies globally along at least one of the passages, with continuity in the channel profiles.

Consequently, this known heat exchanger differs from the subject matter of claim 1 in that the various channels are not separated by two respective weld lines that join the two metal sheets. However, the joining of two sheets by means of weld lines running along the separate

Supplemental Box

parallel channels amounts to a normal technical approach for a person skilled in the art, without involving an inventive step.

It follows that the subject matter of claim 1, and hence claim 11 (see point 2.1) of the present notification), is not considered to be inventive.

3.2) Dependent claims 2-10 and 12-16

Dependent claims 2-10 and 12-16 do not contain any feature that defines a subject matter that would satisfy the requirements of the PCT with regard to inventive step, for the following reasons:

- The additional features of claims 2-5, 8, and 12-15 are already disclosed in document D1.
- The additional features of claims 9, 10 and 16, moreover, have already been used for the same purpose in a comparable heat exchanger; see document D2, abstract. It is obvious to a person skilled in the art to apply these features, with a corresponding effect, to an exchanger according to document D1 and thereby obtain a heat exchanger according to claims 9, 10 and 16.

4) PCT Article 33(4)

The subject matter of claims 1-16 is considered to be industrially applicable within the meaning of PCT Article 33(4).